1/6

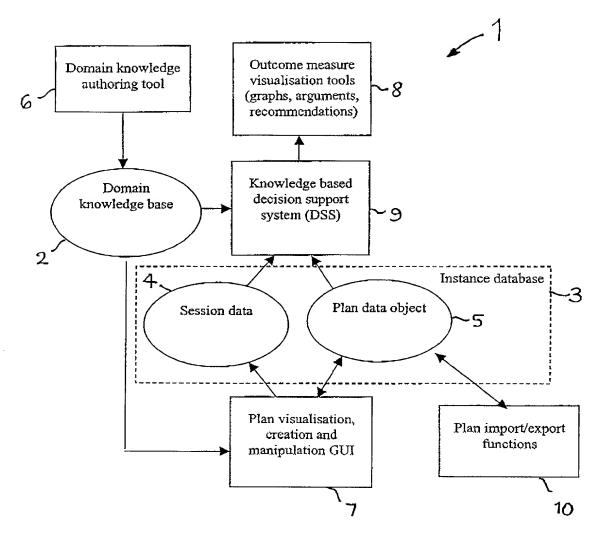


Figure 1. General structure of the invention Ellipses indicate data objects, rectangles indicate processes acting on data, and arrows indicate the direction of data flow.

23b

236

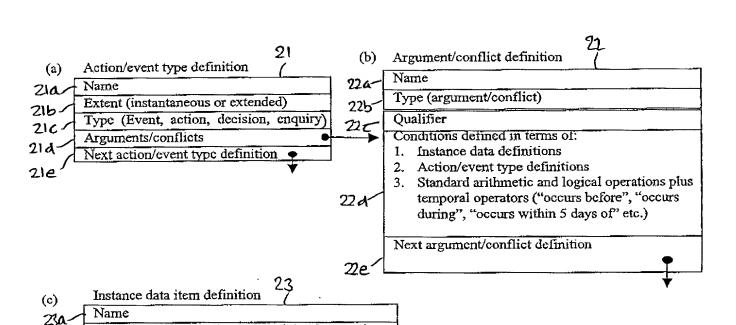
23d

23e

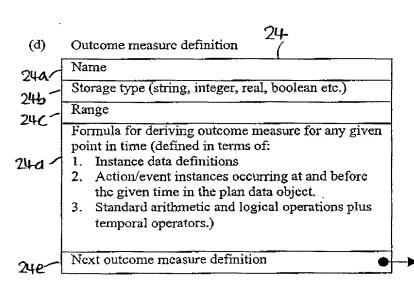
Range

Source (enquiry, database)

Next instance data object definition



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Storage type (string, integer, real, boolean etc.)

Figure 2: Data structures comprising the domain knowledge base. (a) Definition of action or event type, including a pointer to a list of argument or conflict definitions of which one is shown in (b). A linked list of instance data item definitions (c) define the information which may be held in the instance data base for instances within the domain being defined. Examples of such data would be the age, sex and medical history of a patient within a medical planning domain, for example. A linked list of outcome measure definitions (d) define outcome measures applicable to the domain along with the functions for their derivation from domain and instance data.

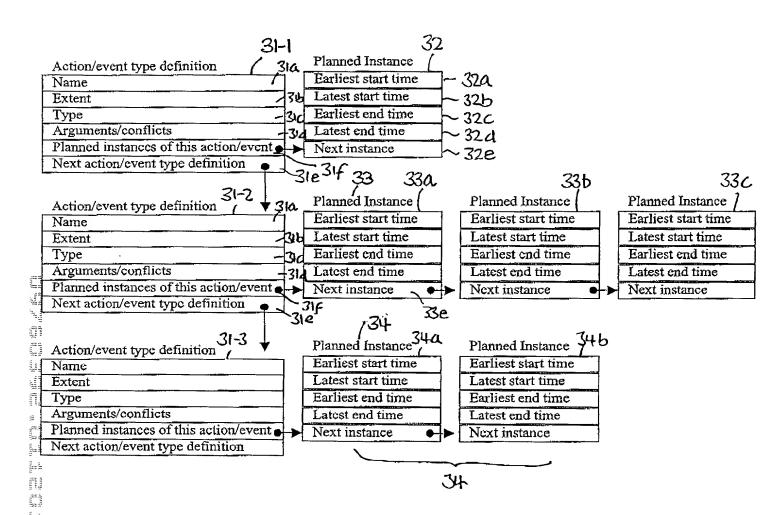


Figure 3: The structure of the plan data object. The set of action/event type definition items defined in the domain knowledge base is structured as a linked list. Each is augmented with a pointer to a linked list list of planned instance items. Each planned instance item represents an instance of the corresponding event or action in the plan, and defines the start and end times for that instance.

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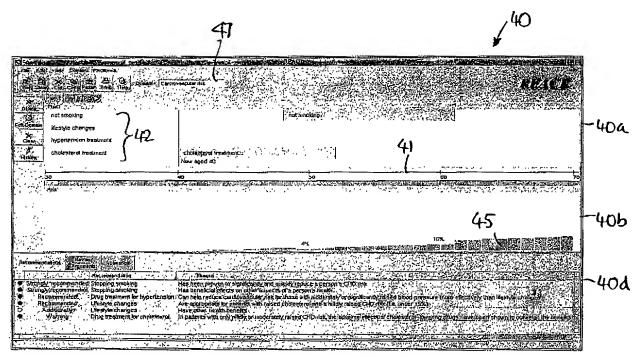


Figure 4. The REACT tool, here being used to investigate the consequences of medical interventions to reduce the risk of cardiovascular disease.

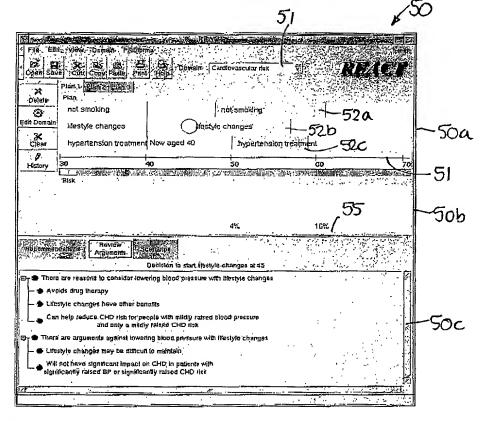


Figure 5. In the lower region of this image REACT displays arguments for and against the decision to manage risk of cardiovascular disease with lifestyle changes.

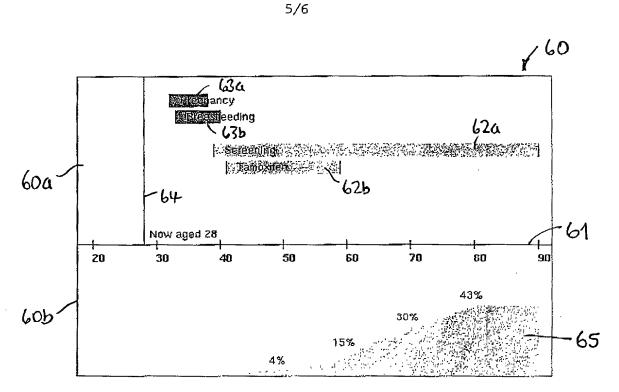


Figure 6. REACT in use in a more complex domain, that of genetic susceptibility to breast cancer. A plan containing anticipated events (blue regions) and actions (green regions) is being constructed, and the pink graph shows projected risk of fatal cancer.

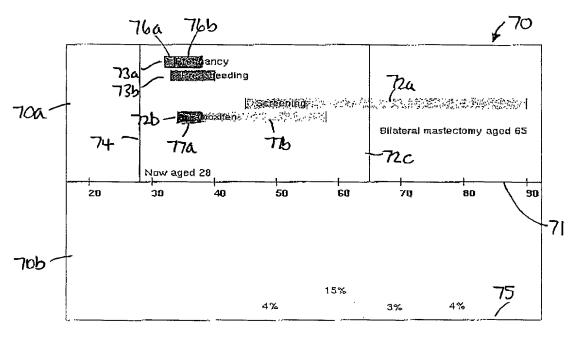


Figure 7. Adding a planned surgical procedure (bilateral mastectomy) changes the projected risk profile. Extending tamoxifen drug treatment to coincide with pregnancy causes a conflict to be highlighted in red

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80a

Figure 8. An example of REACT use in planning treatment for an existing disease, rather than evaluating the risk of contracting a disease. Here a treatment plan is being constructed for a patient with limited breast cancer. An increased set of symbols is used here to distinguish different types of plan elements. Blue circles represent decisions that are planned to be taken during the treatment process. The plan shown represents only one of the possible ways in which these decisions may be taken, and thus one of a number of possible "routes" through the plan. The effect of this set of decisions may be compared with other plans in which the decisions are taken differently. The red square marked "Diagnosis and staging" represents a sub-plan, itself containing several actions and decisions, which may be opened in a separate window for modification if required.